

REMARKS

In this response, dependent claims 82, 86-90, 93, 96, 98, 102, 104, 105, and 107 have been canceled, and new dependent claim 119 added. Thus, claims 1-32, 34-63, 65-81, 83-85, 91, 92, 94, 95, 97, 99-101, 103, 106, and 108-119 are now pending in this application (the independent claims are claims 1, 63, 80, 83-85, 92, 95, 97, 101, 103, 106, and 112). The Office Action issued by the Examiner has been carefully considered.

Several claims have been amended as indicated above to provide more clarity in an attempt to expedite prosecution. Other amendments are discussed below.

Allowable Subject Matter

Applicant appreciates the Examiner's indication that claims 86-89 when combined and claim 93 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim. Applicant has rewritten these claims in this manner as amended independent claims 84 and 92, and Applicant now requests the allowance of these claims.

Claim Rejections: 35 USC §103

Claims 1-3, 11-12, 14, 16, 18, 21, 28-30, 32, 33, 36, 42-47, 50-53, 55-61, 80-83, 92, 94-116 and 118 are rejected under 35 U.S.C. §103(a) over Clare et al. (USPN 6,414,955) (hereinafter Clare) in view of Iyengar et al. ("Information Routing and Reliability Issues in Distributed Sensor Networks" IEEE, 1992) (hereinafter Iyengar).

Applicant's independent claim 112 is amended to recite that a local node collects sensor data from a monitored local environment. Claim 112 is further amended to recite that distribution of data processing on the collected data is done "after the at least one local node has become a member of the sensor network". Finally, claim 112 is amended to recite that "the distribution of the data processing varies dynamically based on the message priority".

The Examiner has continued to rely upon the Clare and Iyengar references in making this rejection. As background so as to keep the limitations of Clare and Iyengar in mind, Applicant kindly directs the Examiner to his prior statement that Clare does not disclose that data processing other than topology setup or addition of a node is distributed through a sensor network. Further, the Examiner in the current Office Action states agreement with Applicant that Iyengar does not disclose distribution of data processing in response to message priority.

Despite these significant deficiencies of Clare and Iyengar, the Examiner still suggests that claim 112 would be obvious over a combination of Clare and Iyengar. The Examiner makes the new argument that Clare teaches use of message priority (15:10-24). However, upon closer examination, Clare here describes only an aspect of its topology learning process for the addition of a new node. Clare specifically teaches that a user can send a high priority instruction to a node, which is in the midst of topology learning, to stop the topology learning so that a higher priority process can be handled (e.g., putting sensors to maximum alert).

Clare describes that the process for addition of the new node continues after handling this high priority instruction until the "new node is now a member of the network" (16:21-27). Thus, one of skill in the art consulting Clare would at most understand Clare to be teaching a topology learning method. However, as mentioned above, claim 112 recites distribution of data processing that occurs after the at least one local node has become a member of the network. By the very wording of Clare, a person of skill in the art would only look to Clare for teachings associated with a new node that is still becoming a member of a network.

As a first point, it should be noted that Iyengar is generally directed to an operating sensor network, and not the assembly of new nodes. One of skill in the art would not combine

Iyengar's teaching of a normally-operating sensor network with a description of how to handle a high priority user instruction during topology learning as taught by Clare.

However, for the sake of argument, even if Clare were to be combined with Iyengar, Clare at most might be considered to teach that a topology learning process may be interrupted by a high priority instruction from a user. Looking at Iyengar, if a topology learning process in a network such as described by Iyengar were to be interrupted by a high priority user instruction, the only teaching as to distribution of data processing would have to come from Iyengar (kindly recall above that the Examiner agrees that Clare itself does not teach distribution of data processing).

In looking solely at Iyengar's teaching of distribution of data processing, Iyengar does not suggest performing this distribution based on message priority (also kindly recall that the Examiner agrees that Iyengar does not teach distribution of data processing in response to message priority). For whatever reason Iyengar's distribution of data processing might begin (e.g., a user instruction), one of skill in the art would not understand from Iyengar that the distribution of data processing would dynamically vary during the operation of the sensor network based on message priority. This simply is not taught by Iyengar (and neither by Clare). Yet, Applicant's claim 112 now recites "the distribution of the data processing varies dynamically based on the message priority". Accordingly, Applicant now requests the allowance of independent claim 112.

Applicant's independent claims 1 and 63 have each been amended to also recite that "the distribution of the data processing varies dynamically based on the message priority". Applicant therefore requests the allowance of claims 1 and 63 for similar reasons as just discussed.

Applicant has added new dependent claim 119, which depends from claim 112 discussed above. Claim 119 recites that "the distribution of the data processing further varies dynamically based on energy availability on the one or more other nodes". As mentioned in the Applicant's prior response, Iyengar also does not teach distribution of data processing in response to node resource cost. Clearly, in light of the above discussion, Clare-Iyengar does not suggest any

distribution of data processing that varies dynamically based on message priority and energy availability. Accordingly, allowance of this claim 119 is respectfully requested.

Applicant's dependent claim 114, which also depends from claim 112, recites that the "distribution of the data processing comprises selecting a processing type, selecting at least one of the plurality of network elements to perform the selected processing type, and transferring at least a portion of the collected data to the selected at least one of the plurality of network elements for processing". Clearly, neither Clare nor Iyengar suggest any distribution of data processing on the collected data be done as recited. Accordingly, Applicant kindly requests allowance of this claim 114.

Applicant's independent claim 103 has been amended to recite a sensor network to "distribute data processing through the sensor network in response to the node resource cost" and that "the distribution of the data processing comprises selecting at least one data type for processing, selecting at least one of the plurality of network elements to process the selected at least one data type, and transferring data of the selected at least one data type to the selected at least one of the plurality of network elements". As discussed above, Clare does not teach distribution of data processing, and Iyengar does not teach responding to node resource cost. Thus, the combination of Clare and Iyengar cannot provide this recited element. Accordingly, claim 103 is now believed allowable for similar reasons as discussed above.

Applicant's independent claim 101 as amended now recites that "the plurality of network elements is configured to distribute data processing through the sensor network" and "the distribution of data processing varies dynamically based on the message priority or the energy availability". Accordingly, claim 101 is believed allowable for similar reasons as discussed above. Further, claim 101 recites "to predistribute code and data anticipated for future use through the sensor network using low priority messages". The Examiner relies upon Davis in a later rejection below for this element, but Davis is solely focused on providing updates for new versions of installed software (2:31) as argued in Applicant's prior response. Applicant respectfully submits that the Examiner has not applied any combination of references that shows

both (i) predistributing data in a sensor network, and (ii) dynamic distribution of data processing as recited. Applicant requests that claim 101 now be allowed.

Applicant's independent claim 83 as amended recites that "the distribution of the data processing varies dynamically based on the message priority and the energy availability". As discussed above, Clare and Iyengar do not teach use of both priority and energy information in this manner. Accordingly, claim 83 is believed allowable for similar reasons as discussed above.

Applicant's independent claim 80 as amended recites "to distribute data processing on the collected data to the plurality of network elements in response to the message priority" and "wherein each of the at least one local node comprises a first processor to handle acquisition of data from the sensor and a second processor to handle signal processing, and wherein the second processor is configured to cycle into and out of a sleep state". Clare-Iyengar is not believed to teach or suggest this combination, and claim 80 is therefore believed allowable.

Applicant's independent claim 97 as amended now recites "the at least one node is further configured to collect sensor data, and wherein the plurality of network elements is further configured to perform routing of the sensor data in the network in response to energy detection for one or more nodes on potential routes for the routing of the data". Also, Applicant's independent claim 95 as amended recites "the plurality of network elements is configured to store or route the gathered data through the sensor network in response to energy detection at the at least one node". Clare and Iyengar are not believed to teach routing of data in response to energy detection as recited. Therefore, claims 95 and 97 are also believed allowable.

Applicant's independent claim 106 has been amended to recite that "the plurality of network elements is further configured so that information of the assembly packet alternates between directing a node to become a base node of a particular cluster number and directing a node to become a remote node of a particular cluster number, and wherein the particular cluster number is incrementally changed when the information of the assembly packet so alternates". Neither Clare nor Iyengar teaches any use of an assembly packet as recited. Therefore, claim 106 is also believed allowable.

Claims 4-10, 19, 25, 38-41, 48-49, 62-79, 85, and 90 are rejected under 35 U.S.C. §103(a) over Clare-Iyengar in view of Myer et al. (USPN 6,615,088) (hereinafter Myer).

Applicant's independent claim 63 was discussed above. Myer does not supply the deficiencies of Clare-Iyengar discussed above.

Applicant's independent claim 85 recites "transfer[ing] data using message packets, wherein the message packets are aggregated into compact forms." **The Examiner states that Clare and Iyengar do not disclose aggregating data processed in a plurality of nodes for further processing by other nodes.** The Examiner relies upon Myer as describing polling. However, Myer does not teach or suggest any aggregation of message packets into compact forms by its description of polling. Instead, Myer merely describes obtaining the status of several devices—compacting or aggregation of this status information is not discussed by Myer.

Further, claim 85 has been amended to recite that the "message packets are aggregated into the compact forms using message aggregation protocols, and wherein the message aggregation protocols are adaptive to message priority and available energy". Therefore, claim 85 is believed allowable. None of Myer, Clare, or Iyengar teaches or suggests being adaptive to message priority and available energy as recited. Accordingly, claim 85 is believed allowable for at least this reason.

Claims 13, 17, 25, 65, 68, 84, and 86 are rejected under 35 U.S.C. §103(a) over Clare-Iyengar in view of Kraus et al. (USPN 5,184,311) (hereinafter Kraus).

Applicant's independent claim 84 is now believed allowable as discussed above. All other rejected claims are dependent claims or have been canceled. Kraus does not supply the missing teachings of Clare-Iyengar discussed above.

Claims 15, 54, 101, 102, and 117 are rejected under 35 U.S.C. §103(a) over Clare-Iyengar in view of Davis et al. (USPN 5,742,829) (hereinafter Davis).

Applicant's independent claim 101 was discussed above. Davis does not supply the missing teachings of Clare-Iyengar discussed above, and further deficiencies of Davis are discussed above. All other rejected claims are dependent claims or have been canceled.

Claims 19, 20, and 31 are rejected under 35 U.S.C. §103(a) over Clare-Iyengar in view of Makansi et al. (US 2002/0154631) (hereinafter Makansi).

All rejected claims are dependent claims. Makansi does not supply the missing teachings of Clare-Iyengar discussed above.

Claims 9, 22-24, 27, and 37 are rejected under 35 U.S.C. §103(a) over Clare-Iyengar in view of Humpleman et al. (USPN 6,546,419) (hereinafter Humpleman).

All rejected claims are dependent claims. Humpleman does not supply the missing teachings of Clare-Iyengar discussed above.

Conclusion

Applicant notes that the Examiner has taken Official Notice regarding separating data destinations with respect to claim 113. Applicant respectfully does not believe the Examiner to have sufficiently explained how such separating of data destinations is done in response to message priority so as to provide an appropriate basis for taking Official Notice. Applicant requests that the Examiner provide factual support for this assertion with a reference that shows

any such data separation for distribution of data processing in a sensor network, or that the Examiner not rely upon this Official Notice in the rejection.

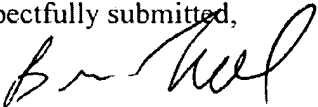
Applicant's other dependent claims not explicitly discussed above depend, directly or indirectly, from Applicant's independent claims and are believed allowable for at least the reasons discussed above.

In view of the above, Applicant respectfully requests the reconsideration of this application and the allowance of all pending claims. It is respectfully submitted that the Examiner's rejections have been successfully traversed and that the application is now in order for allowance. Applicant believes that the Examiner's other arguments not discussed above are moot in light of the above arguments, but reserves the right to later address these arguments. Accordingly, reconsideration of the application and allowance thereof is courteously solicited.

The Commissioner is authorized to charge any additional fees associated with this filing, or credit any overpayment, to Deposit Account No. 50-2638. If an extension of time is required, this should be considered a petition therefor.

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Respectfully submitted,



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